**Chapter 1: INTRODUCTION**

**1.1 Project Summary**

Recent years, the use of mobile application has become popular. Mobile Application represents the excellent example of managing the online information in its best possible way. The cost includes the manpower uses, and the time issue. By using the mobile application, there is extreme flexibility in managing the data. In our day to day life all of us use mobile devices which include most of our day to day important data. But nowadays, cases of mobile theft have increased. So, we are trying to develop a mobile application through which users can prevent their device from being stolen and in case the device gets stolen then user can control his/her data and can prevent it from being misused as well as he/she can find his/her device.

**1.2 Purpose**

The following are the purposes of our proposed system that are mention below: -

* To keep our mobile devices safe from being stolen.
* To provides different pre-protection modes to prevent mobile theft.
* To provide post-protection modes to protect our personal data and find device in case device is stolen.

**1.3 Scope**

We are going to develop a mobile application which will prevent our mobile device from being stolen and in case it is stolen then user can control what happens with his/her personal data, locate and find his/her device.

## Table 1.3 The Scopes and Boundaries of Project

|  |  |
| --- | --- |
| **Scope** | To bring digitization in preventing and finding mobile devices in mobile-thefts. |
| **Modules** | There will be Modes to prevent mobile theft charging, headphone, pocket detection), Modes to protect data and recover device in case of theft. |
| **User** | The system is going to be used by the Students, Employees, Daily Commuters and every day to day mobile phone user. |
| **Specification** | We are going to make mobile application using Android Studio and Firebase database. |
| **Usage** | This system can be used by day to day mobile user to prevent mobile theft or to protect his/her data and recover device in case of theft. |
| **Input** | Applications takes input from mobile sensors and detects the theft activity and when stolen user give inputs through sms commands which are in form of button to encrypt data, get GPS location etc |
| **Output** | The output will be alarm buzzer in case of unauthorized activity and GPS location co-ordinates when GPS location is requested and acknowledgement when data is encrypted. |

**1.4 Report Outline**

**Chapter 1: In this chapter the overview of the project and purpose & scope of the project is discussed.**

**Chapter 2: This chapter show the literature survey made on the similar projects and systems to the project about to be developed.**

**Chapter 3: This chapter show the information about the technology which is used for the implementing to this project, information about planning and scheduling of this project. It includes different techniques for planning & scheduling. These techniques are work break down structure & Gantt chart.**

**Chapter 4: It includes the information about software requirement specification of the project. It includes functional and non-functional requirement of the project.**

**Chapter 5: It includes the analysis of the system develop by the system developer. In that include the feasibility study of this system. Also include the diagrams like UML diagram & USECASE diagram of the system which shows the behavioural aspect of the system.**

**Chapter 6: It includes the schema designs of the project. This is use for storing the data in database.**

**Chapter 7: It includes the AEIOU Canvas and other canvas of the project. This is used to** interpret observations gathered by ethnographic practice.

**Chapter 8: It includes the implementation of the project.**

**Chapter 9: This chapter contains deep knowledge about the reference, conclusion of the project and remaining future work of this project or system.**

**Chapter 2: LITERATURE REVIEW**

**1. Find My Device**

Find my Phone and other or similar is the name given by various manufacturers to software and a service for [smartphones](https://en.wikipedia.org/wiki/Smartphone), whereby a registered user can find the approximate location of the phone if switched on, over the [Internet](https://en.wikipedia.org/wiki/Internet), or by the phone sending [e-mail](https://en.wikipedia.org/wiki/E-mail) or [SMS](https://en.wikipedia.org/wiki/SMS) text messages. This helps to locate lost or stolen phones.

[Apple](https://en.wikipedia.org/wiki/Apple_Inc.) offers a free service called [Find My iPhone](https://en.wikipedia.org/wiki/ICloud#Find_My_iPhone) for iPhones running iOS. [Microsoft](https://en.wikipedia.org/wiki/Microsoft)'s [My Windows Phone](https://en.wikipedia.org/wiki/My_Windows_Phone) offers a similar service for phones running [Windows Phone](https://en.wikipedia.org/wiki/Windows_Phone). Similarly, [Google](https://en.wikipedia.org/wiki/Google) offers [Find My Device](https://en.wikipedia.org/wiki/Find_My_Device) for phones running [Android](https://en.wikipedia.org/wiki/Android_(operating_system)).

Some of these applications may have limitations which can be checked before installing, such as only working in some countries, dependencies upon the phone's implementation of [GPS](https://en.wikipedia.org/wiki/GPS), etc. Similar paid or free apps are also available for all device platforms.

**2. Anti-Theft Alarm Application**

"Anti Theft Alarm" application helps you know whenever someone is trying to unlock your mobile when it is not with you. Imagine you are sleeping or in bathroom and someone tries to unlock your mobile to see the content, even if you set a good pattern or pin one would figure out after few attempts. And imagine if there is an App which would scream loud when it detects that. Anti theft alarm is just that. A loud siren is played when someone tries to unlock and fail to unlock your mobile's pin/pattern/password. A must have app on all your hard earned Smartphone.

**3. Mobile Tracking Based on Phone Theft Detection**

In this Android Application is deployed with initial registration of Alternative Mobile numbers. An Application which is deployed in the mobile devices can be able to Track the current location of the device. If the robber changes the SIM card, immediately then location details are sent to the alternative Phone number of the original User. In this paper, both the logic of tracking the Theft Phone with SIM Card & Theft Phone with changed SIM Card is tracked continuously. The registered mobile numbers can get the SMS alert from the Theft Mobile. This process is reworked continuously to track the android mobile phone.

**Table 2.1 Table for Literature Survey**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr No.** | **Reference** | **Limitations** | **Solution** | |
| 1. | Google Find my Device [[1]](https://en.wikipedia.org/wiki/Find_My_Phone#cite_note-1) | Internet is required | SMS based Commands. |
| 2. | Anti-Theft Alarm Application | Every time it must be enabled. | Enabled until user manually disable feature. |
| 3. | Mobile Tracking Based on Phone Theft Detection[[2]](https://en.wikipedia.org/wiki/Find_My_Phone#cite_note-2) | Internet is required. | SMS based commands. |
| 4. | Mobile Theft Tracking Application [[3]](https://en.wikipedia.org/wiki/Find_My_Phone#cite_note-2) | GPS & Mobile Data must be enabled. | It can be turned on with SMS commands. |

**Chapter 3: PROJECT MANAGEMENT**

**3.1 Project Planning and Scheduling**

**3.1.1 Project Development Approach**

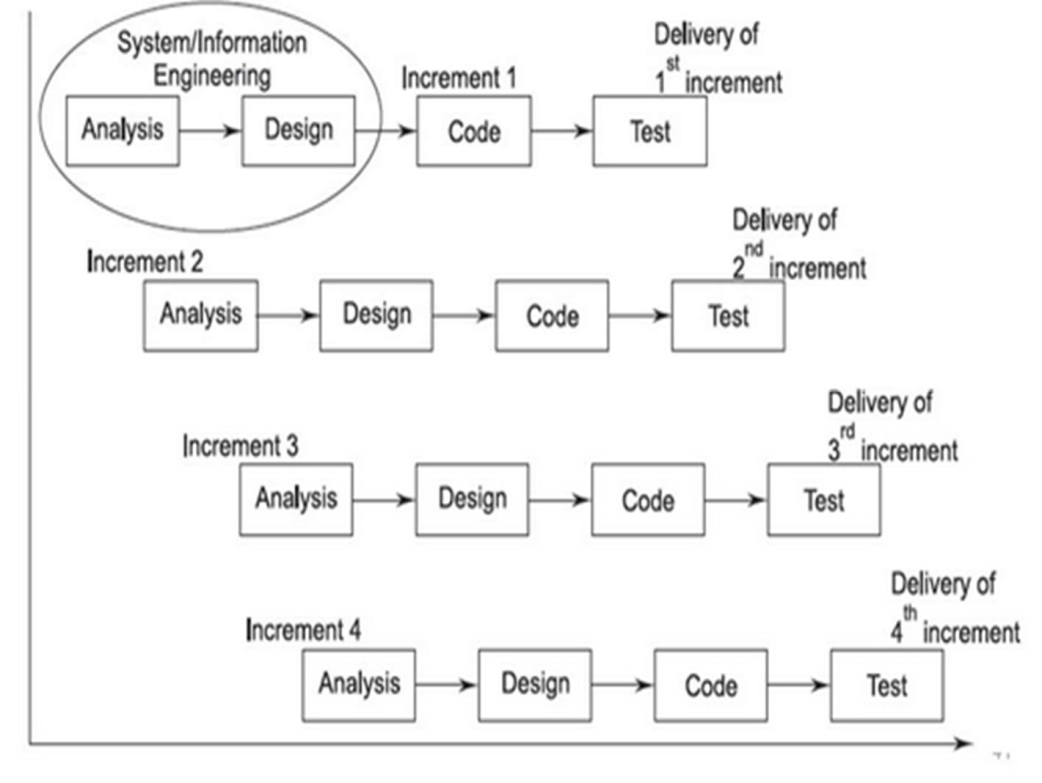
We have developed our project by using Incremental development model of Software Development Lifecycle. This model is a best approach according to a user’s requirements. To achieve the goal and fulfill the constraints of this project Incremental model is worthier.

Fig. 3.1.1 Iterative Enhancement Model [[4]](https://en.wikipedia.org/wiki/Find_My_Phone#cite_note-2)

The incremental model (also known as iterative enhancement model) comprises the features of waterfall model in an iterative manner. The waterfall model performs each phase for developing complete software whereas the incremental model has phases similar to the linear sequential model arid has an iterative nature of prototyping. During the implementation phase, the project is divided into small subsets known as increments that are implemented individually. This model comprises several phases where each phase produces an increment. These increments are identified in the beginning of the development process and the entire process from requirements gathering to delivery of the product is carried out for each increment.

**Justification:**

The idea behind the model is to process the requirements and improve the requirements iteratively until the implementation of final software. In addition, similar to prototyping, the increment provides user feedback which specifies the software requirements. This is a useful approach as it makes easier the software development process as smaller increments are easier to implement than implementing the entire system at once.

In incremental model each stage adds some functionality to the product which is passed it on to its next stage. The core product is generally the first increment and is used for a detailed evaluation by the user. This process results in creation of a plan for the next increment. This plan decides product improvement (features or functions) to achieve user requirements.

**Advantages:**

* It is generally easy to test and debug then other method of software development.
* Easily increment can be developing with a few people.
* Number of people require is less.
* Easy to add quality.
* The system can be design in such a manner that it can be deliver into PC's.

**Disadvantages:**

* Requires planning at the management and technical level.
* As addition functionally is added to the product related to system architecture which are not earlier prototype.
* Becomes invalid when there is time constraint on the project schedule or when the users cannot accept the phased deliverables.

**3.1.2 Project Plan**

We have different modules in our project which will be helpful for completing project. And the time duration is dependent on the nature of modules.

**Phase 1:** It contains design model, database design and documentation.

**Phase 2:** It contains connectivity of database, home page, and login.

**Phase 3:** It consist of pre-protection module and protection module.

**3.1.3 Schedule Representation**

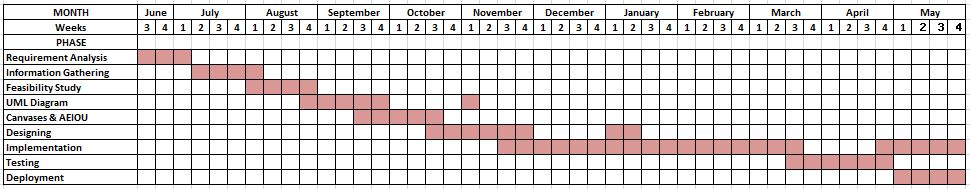


Fig. 3.1.3 Schedule Representation

**Chapter 4: SYSTEM REQUIREMENTs SPECIFICATION**

**4.1 User Characteristics**

The users of this system are as follows: -

* Students
* Employees
* Worker
* Daily Commuter

Students make use of system when they are travelling through public services to prevent their device from being stolen.

Employees, Worker, and every other day to day user of mobile phone use this system to prevent their mobile device from being stolen or in case of stolen to protect their data and find their mobile device.

**4.2 Hardware and Software Requirements**

**Hardware:**

* Smart Phone: 512MB RAM or more
* Computer System: 4GB RAM or more

**Software:**

* Operating System: Android 6.0 and above
* Front End: Android with API level 23
* Back End: Java, Firebase

**Documentation:**

* MS Word
* MS Excel
* Draw.io
* Plagiarism Checker X

**Chapter 5: SYSTEM ANALYSIS AND SYSTEM DESIGN**

5.1 Feasibility Study

Feasibility study is about the challenges we may face while making the project or while implementing a task as it includes technical development and project implementation. As we can only work on the project which is feasible, else it would be waste of time and efforts trying to implement a project which is not feasible.

* Technical Feasibility.
* Economic Feasibility.
* Operational Feasibility.
* Schedule Feasibility.
* Legal Feasibility.

**5.1.1 Technical Feasibility**

Technical feasibility study includes the platform in which our project would work properly. It checks whether the proposed system which we are going to create can be implemented by using the existing technology or not. By looking into the feasibility and compatibility we had decided to implement the proposed system by using Android Studio and Firebase.

**5.1.2 Economical Feasibility**

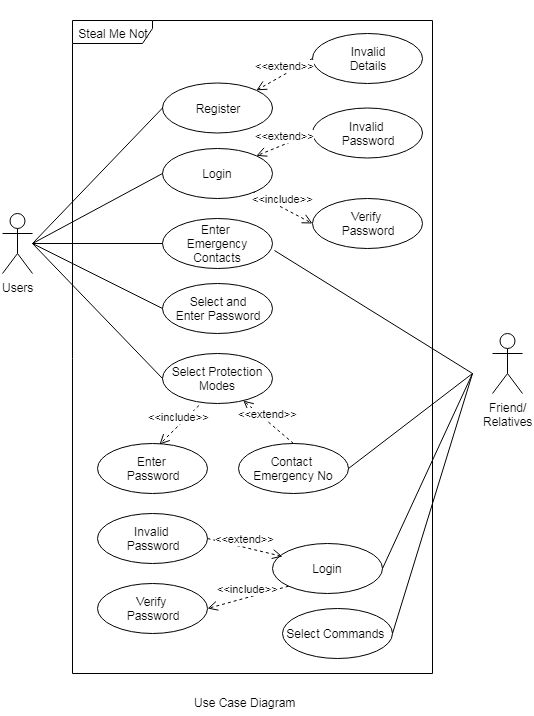
Economic feasibility includes the costs or expenses related to the development of the project. Here we should take care of economic cost as it should not exceed the limit else it will be difficult for the users to purchase or sell the product due to the higher cost. So, looking into the following matter we are trying to develop a cost-efficient system.

**5.1.3 Operational Feasibility**

Operation feasibility shows the rate of solving the real-world problem faced by the user with the proposed system. It is a standard that ensures interoperability without stifling competition and innovation among users, to the benefit of the public both in terms of cost and service quality. The proposed system is acceptable to users. So, the proposed system is operationally feasible.

**5.2 Functions of System**

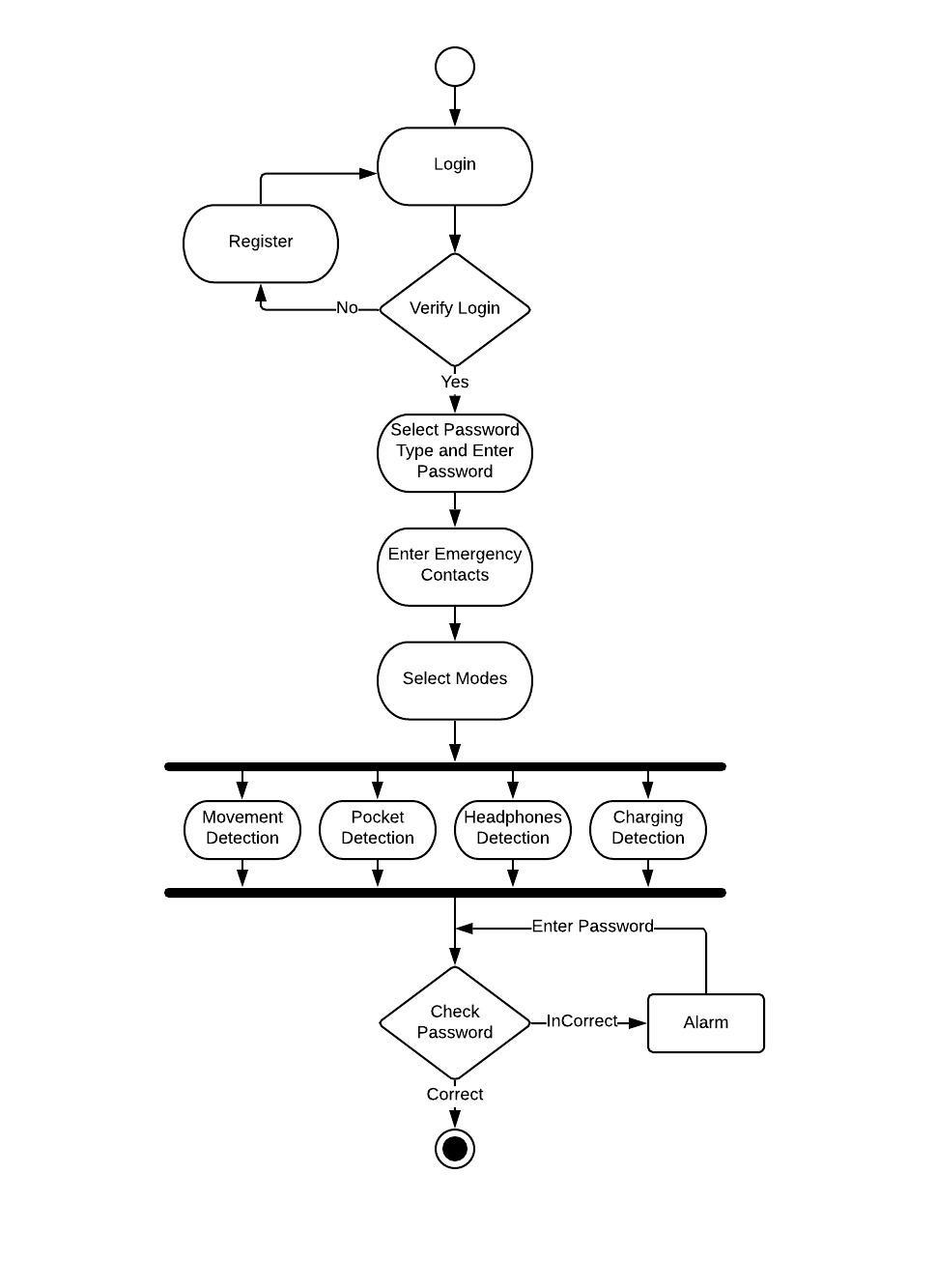
**5.2.1 Use Case Diagram for Steal Me Not**

****

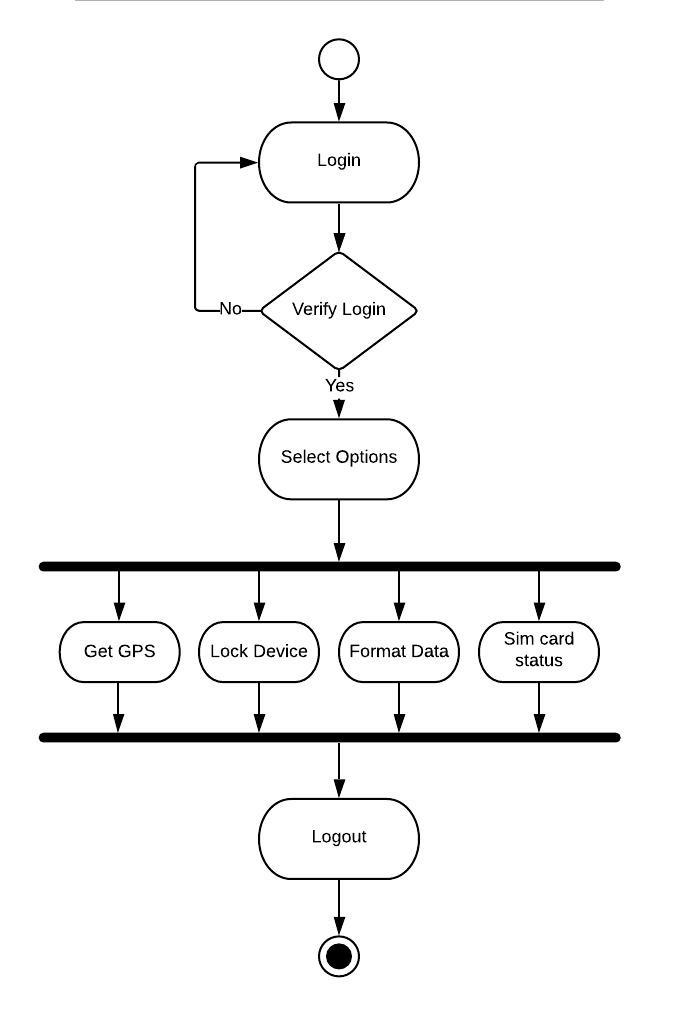
**Fig. 5.2.1 Use Case Diagram for Steal Me Not**

**5.3 Data Modeling**

**5.3.1 Activity Diagram for Steal Me Not**

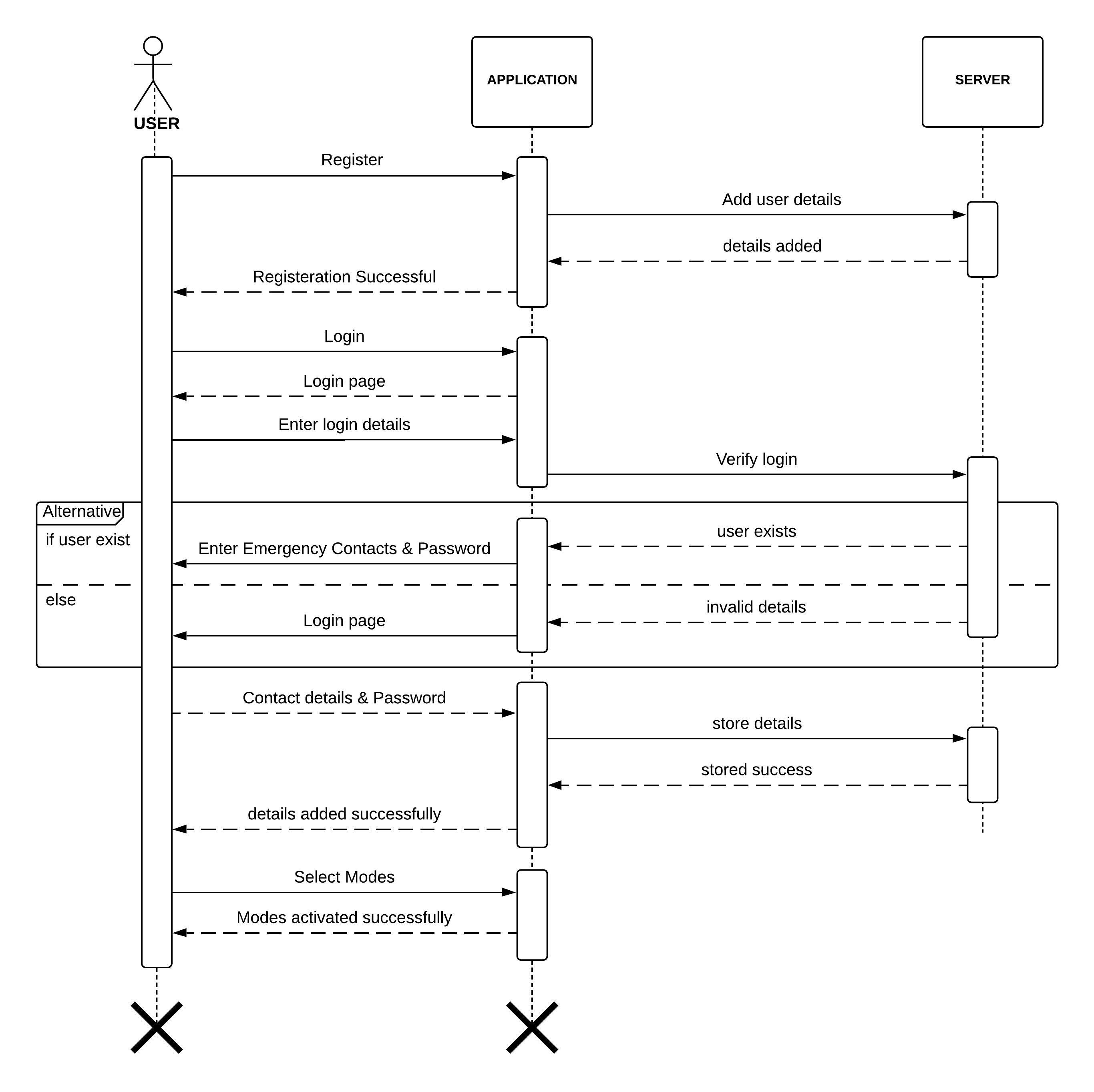
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**Fig. 5.3.1.1 Activity Diagram for User (Before Stolen)**

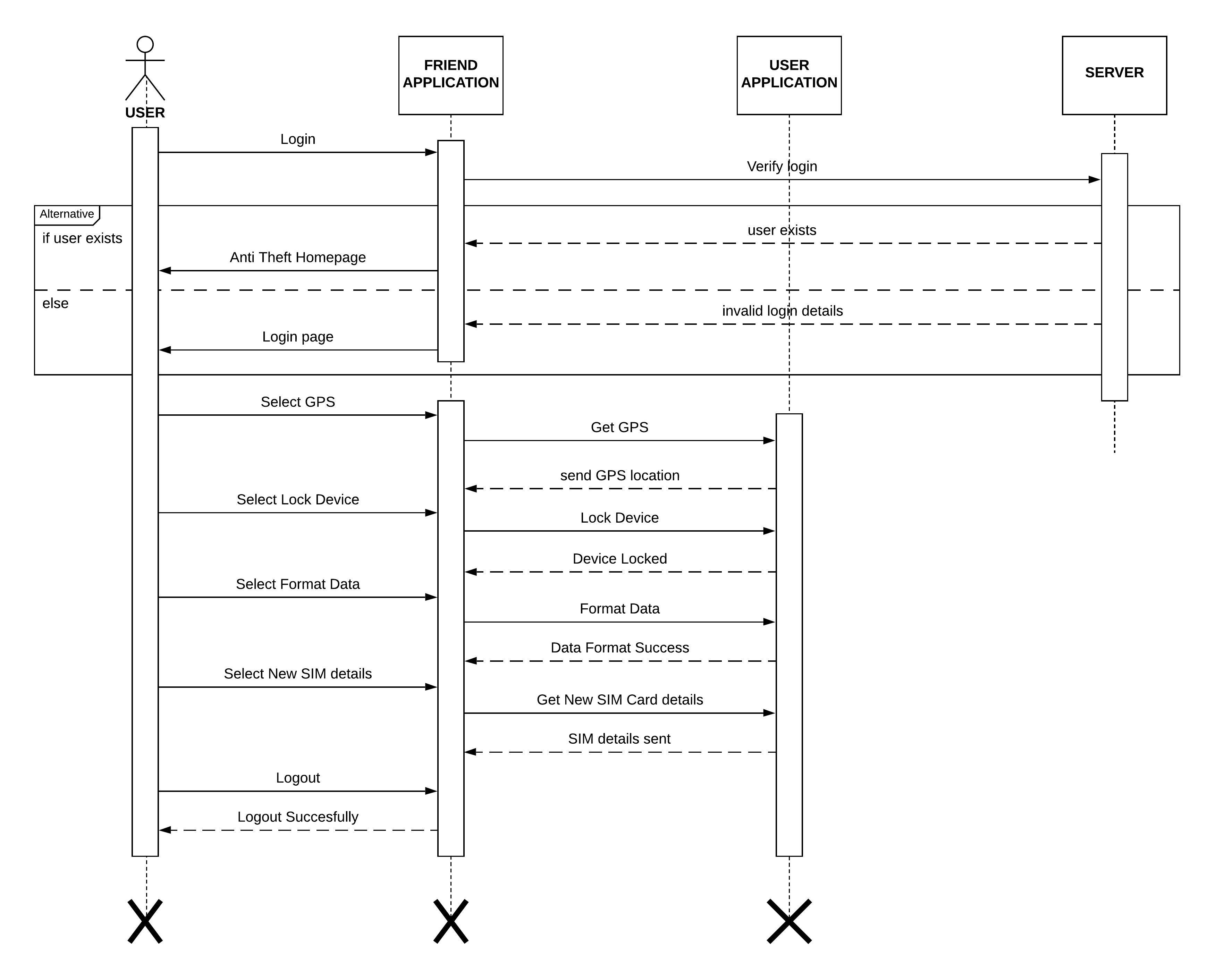
****

**Fig. 5.3.1.2 Activity Diagram for User (After Stolen)**

**5.3.2 Sequence Diagram for Steal Me Not**

****

**Fig. 5.3.2.1 Sequence Diagram for User (Before Stolen)**

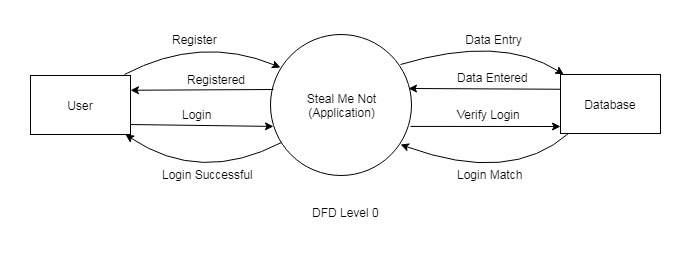
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**Fig. 5.3.2.2 Sequence Diagram for User (After Stolen)**

**5.4 Functional and Behavioral Modeling**

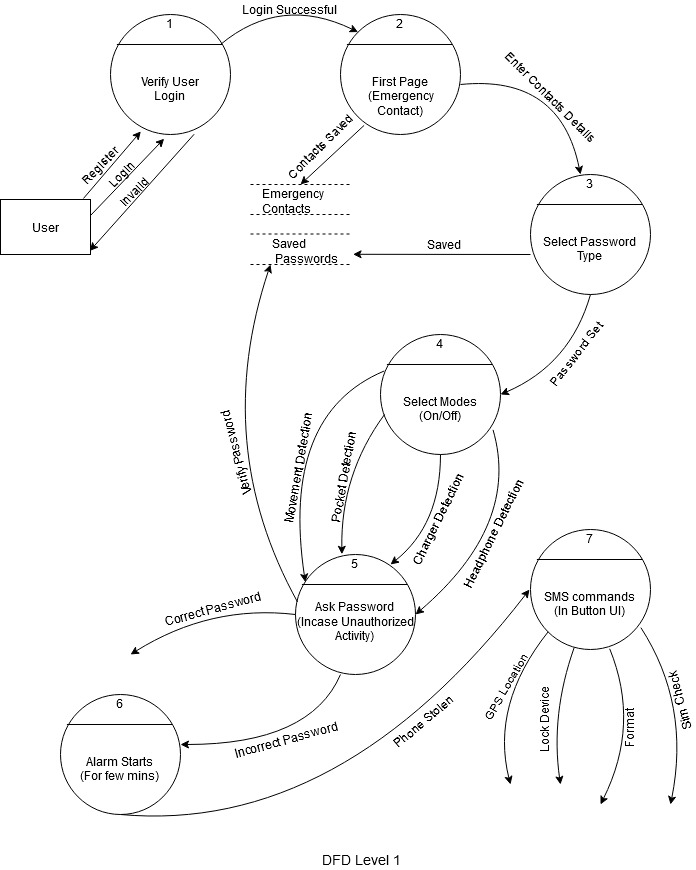
**5.4.1 Data Flow Diagram for Steal Me Not**

**Level 0:**

****

**Fig. 5.4.1.1 DFD Level 0 for Steal Me Not**

**Level 1:**

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**Fig. 5.4.1.2 DFD Level 1 for Steal Me Not**

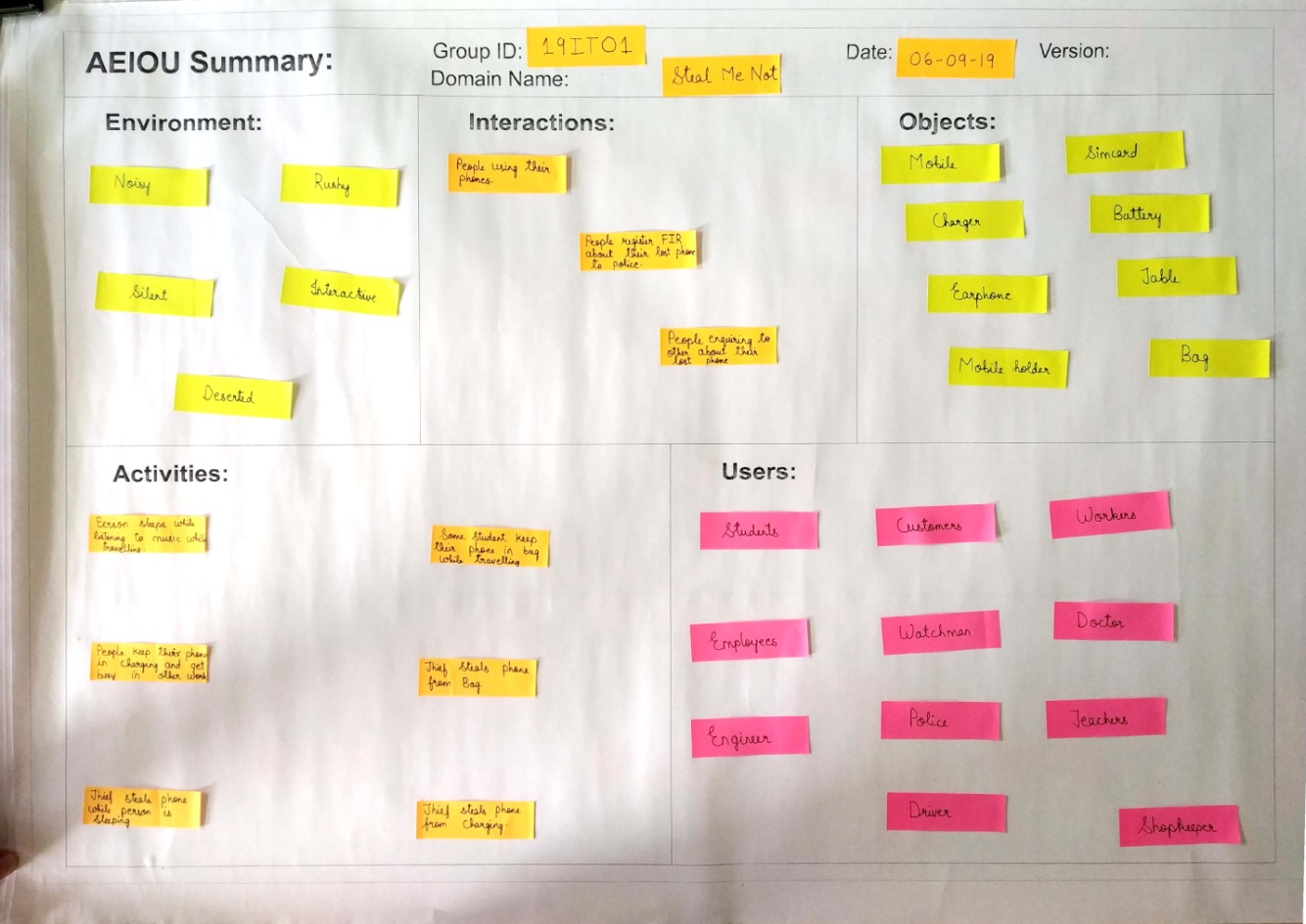
**5.5 Database Schema Design**

**Table 5.5.1 Database Table for User**

|  |  |  |
| --- | --- | --- |
| **COLUMN NAME** | **DATATYPE** | **DESCRIPTION** |
| U\_ID | INT | PRIMARY KEY AUTOGENERATED |
| FULL NAME | VARCHAR | REQUIRED |
| CITY | VARCHAR (50) | REQUIRED |
| MOB NO | INT | REQUIRED |
| EMAIL ID | VARCHAR | REQUIRED |
| IMEI | LONG INT | AUTOMATIC |

**5.6 Canvas**

**5.6.1 AEIOU Summary**

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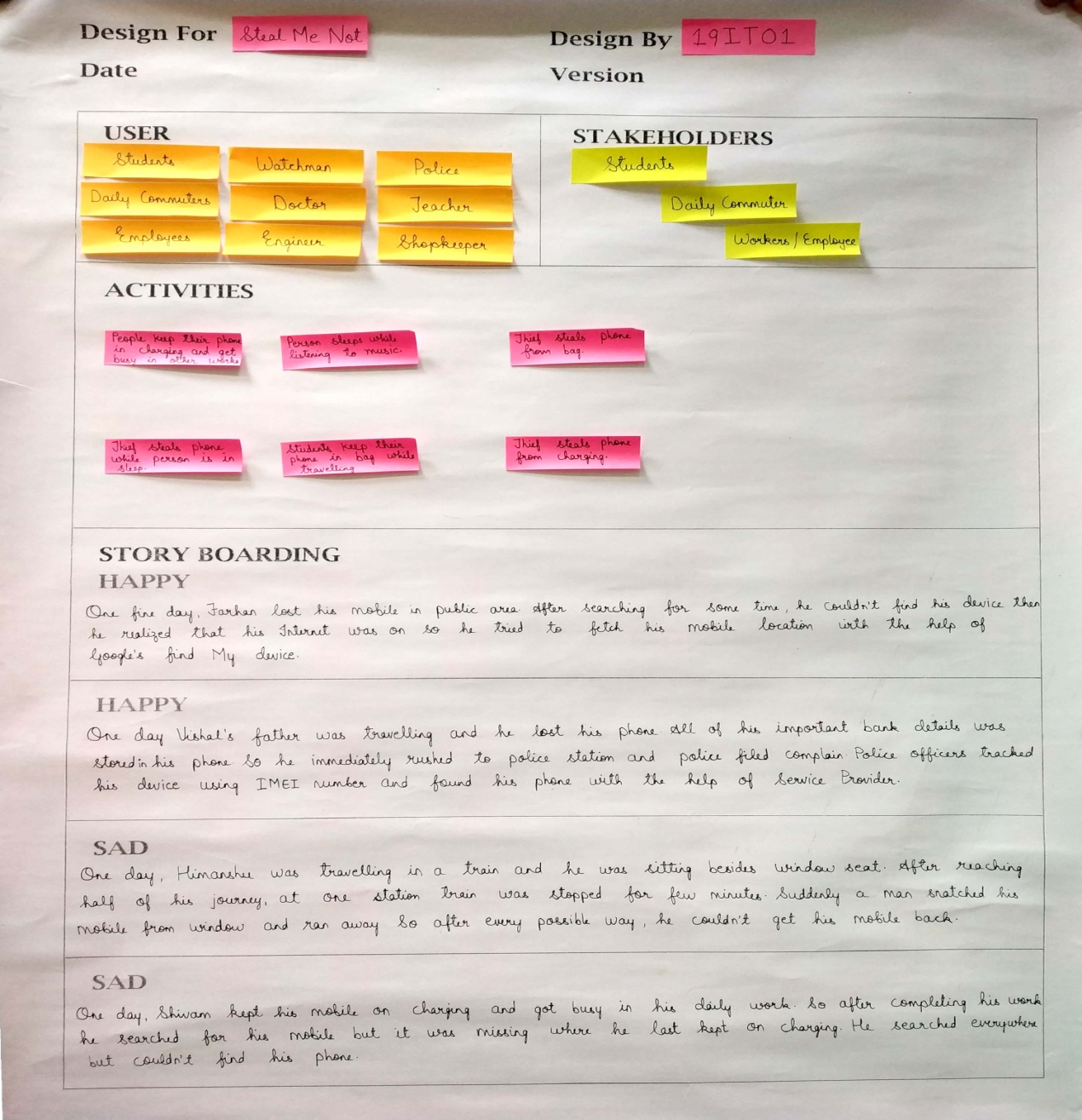
**Fig. 5.6.1 aeiou Summary**

In this canvas we have defined:

* Environment: What type of Environment?
* Interactions: Who interact with whom?
* Objects: Which objects are used?
* Activities: What Activities are performed?
* Users: Who are the Users?

**5.6.2 Empathy Summary Canvas**

Empathy summary canvas is used to have information about the existing system. From the existing system, we have summarized a lot many problems and filtered out the problems and find out probable solution which will be overcome by our system.

****

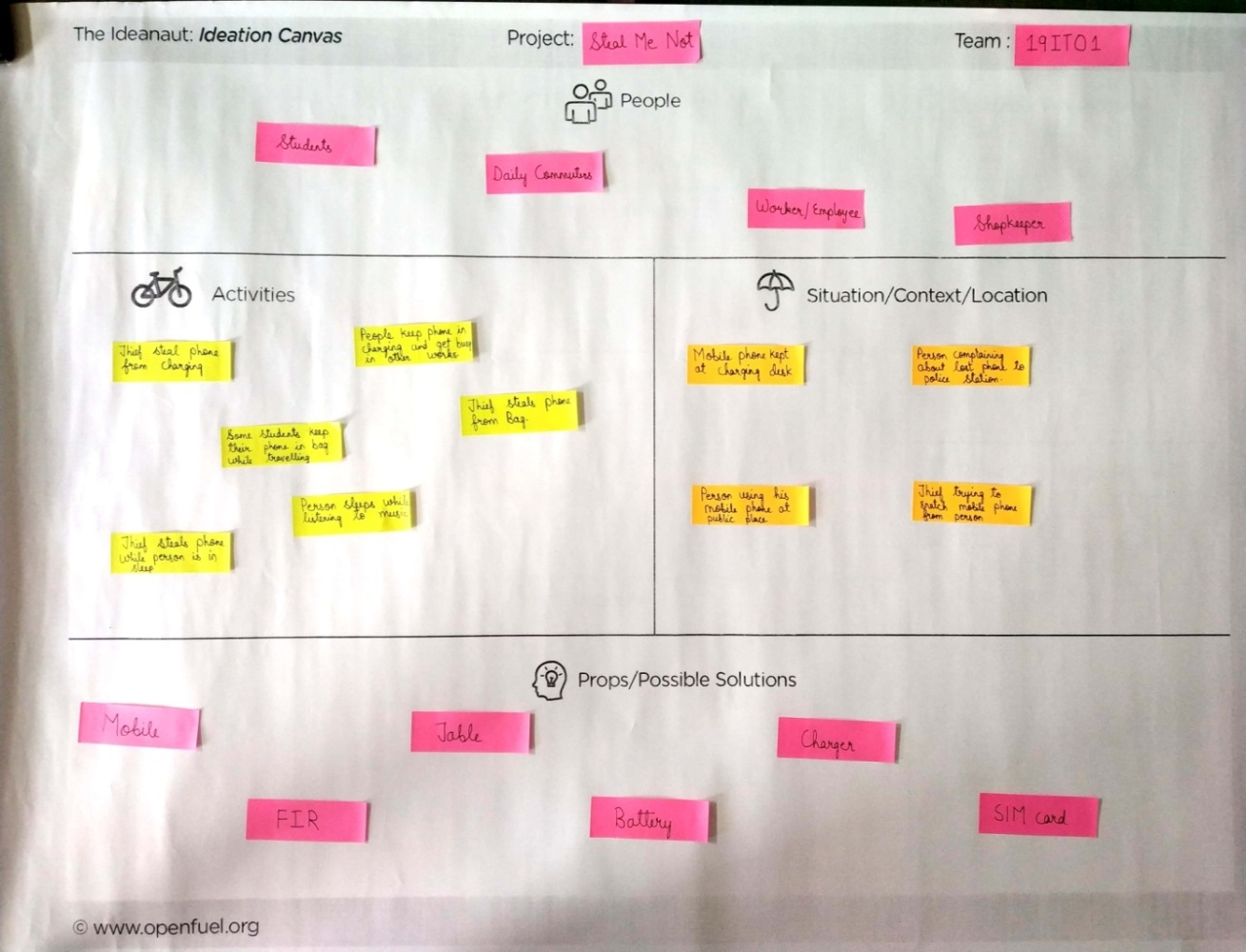
**Fig. 5.6.2 Empathy Summary Canvas**

In this canvas we have defined:

* User-Who are the Users?
* Stakeholders-Which person or organization who are interested.
* Activities-Activities related to stakeholders.
* Story Boarding-Story Related to Activities.

**5.6.3 Ideation Canvas**

Ideation canvas is used to find out the main problem from the most probable five problems and try to find out the possible scope.

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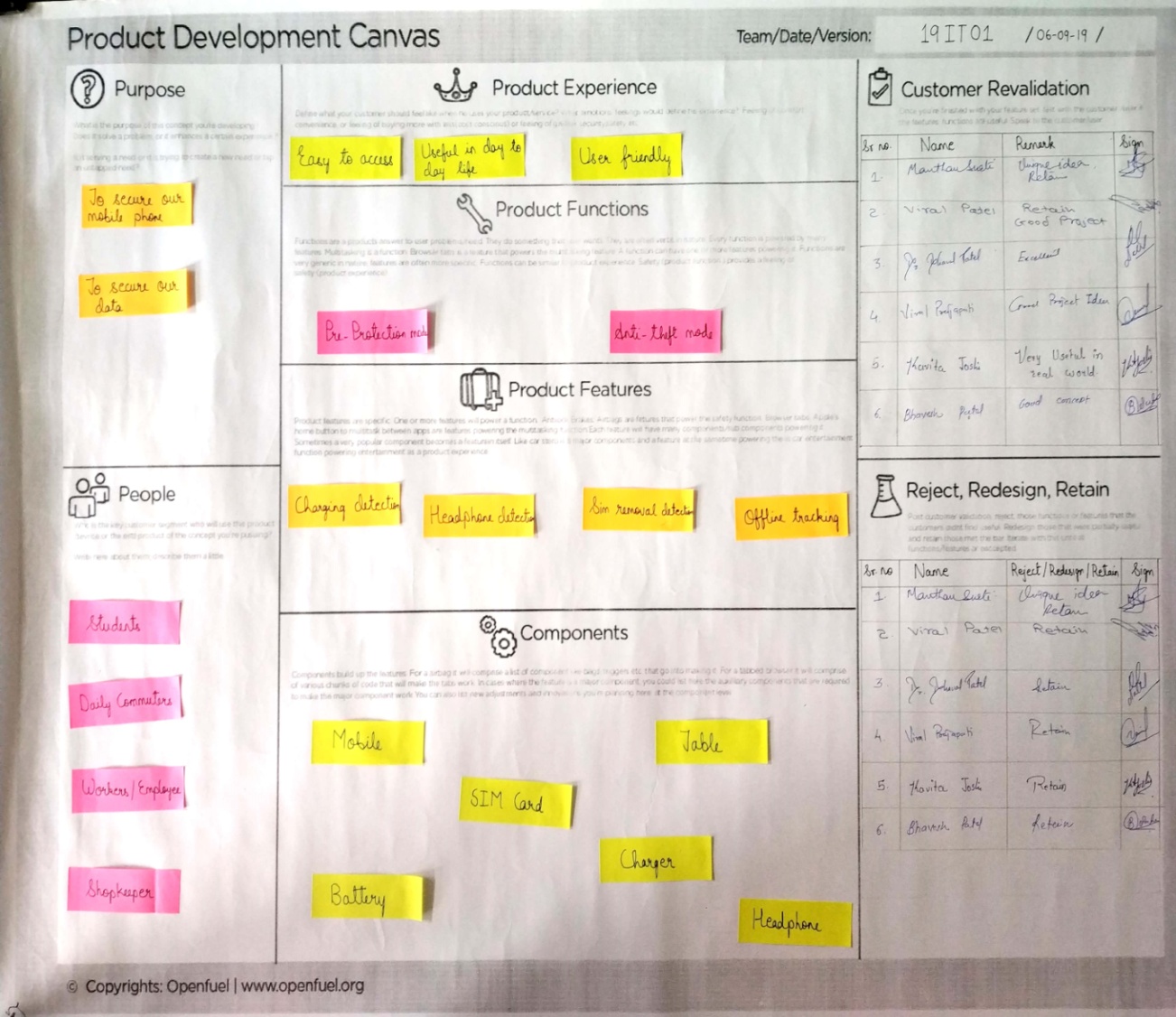
**Fig. 5.6.3 Ideation Canvas**

In this canvas we have defined:

* People: Includes people using our system.
* Activities: Includes activities done in our system.
* Situation/Context/Location: Includes the locations where our system used.
* Props/Possible Solution: Includes the props used to use our system.

**5.6.4 Product Development Canvas**

Product Development Canvas is used to describe the overall features and functionality of our project, other than that it also consists of our product approach, that is contains the module of our project.

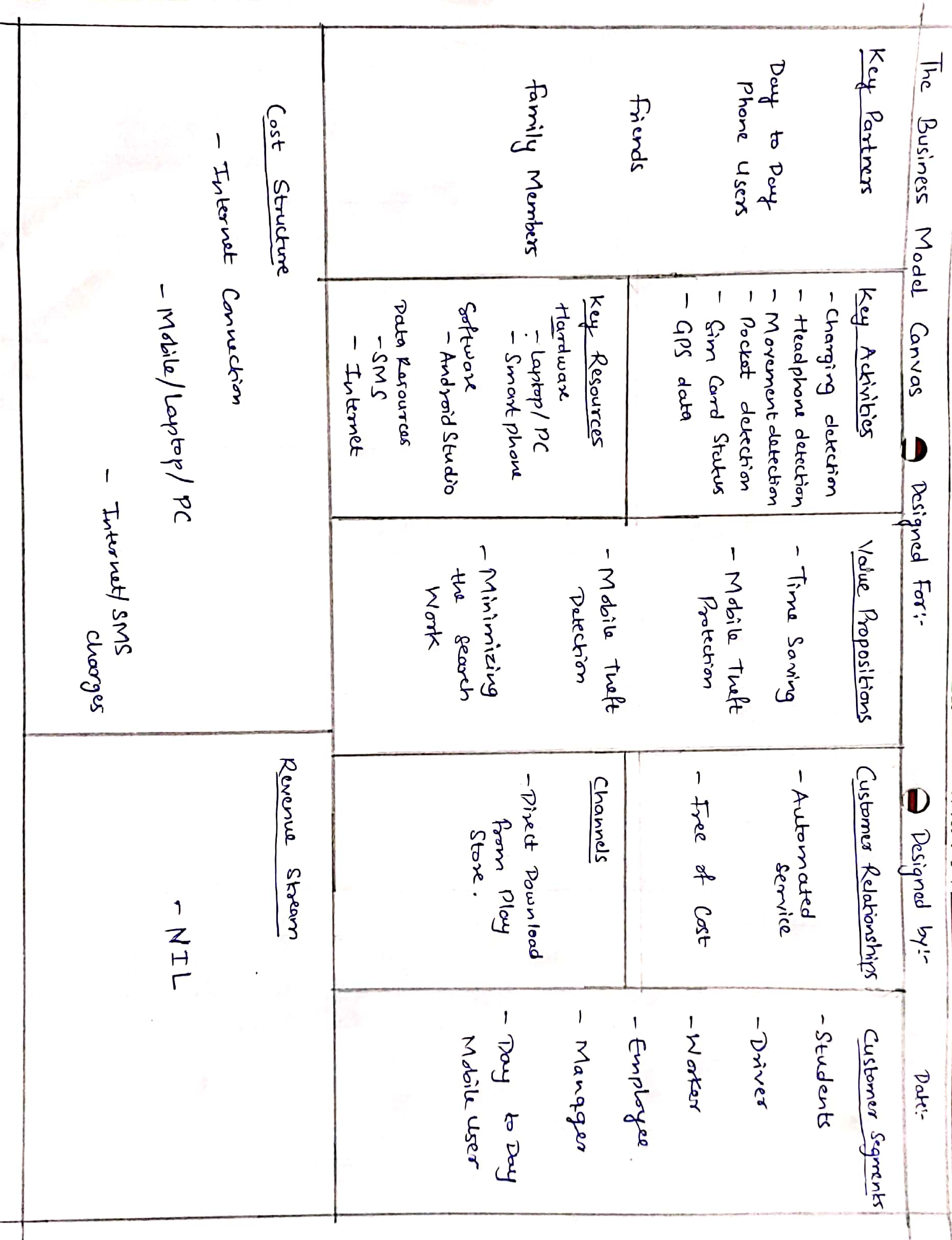
****

**Fig. 5.6.4 Product Development Canvas**

In this canvas we have defined:

* Purpose: Includes purpose of our system.
* People: Includes the people using our system.
* Product Experience: Includes the experienced features of our system.
* Product Function: Includes the main functions of our system.
* Product Features: Includes the features of our system.
* Components: Includes the components of our system.
* Customer Revalidation: Includes the customer revalidation features of our system.
* Reject/Redesign/Retain: Includes the retail property of our system.

**5.6.5 Business Model Canvas**

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**Fig. 5.6.5 Business Model Canvas**

**Key Partners:**

* The key partners of our project are Friends, Families and day-to-day phone user.

**Key Activities**

* Following major activities are carried out in our app are:
* Charging detection
* Headphone detection
* Movement detection
* Pocket detection
* SIM Card Status
* GPS data

**Key Resources:**

* Different type of resources used in our project are as follows:
* Hardware
* Laptop/personal computer
* Smart mobile phones
* Software
* Android Studio
* Data Resources
* SMS
* Internet

**Value Preposition:**

* By making use of our app one can gain following prepositions
* Time Saving
* Mobile Theft Protection
* Mobile Theft Detection
* Minimizing the search work

**Customer Relationship:**

* Automated Service
* Free of Cost

**Channels:**

* Direct download from Play store

**Customer Segment:**

* Different segments of individuals which will use our project are:
* Students
* Worker
* Employee
* Day-to-Day mobile user.

**Cost Structure:**

* Internet connection
* Mobile/laptop/personal computer
* SMS charges

**Revenue Streams:**

* NIL

**Chapter 6: IMPLEMANTATION**

**6.1 Testing**

Software testing is a process of estimating the quality of the software and represents the actual requirement, design and code generation. The main phases of testing conduct verification and validation. It is one of the most important parts in the Software development because it will help us in find that a user requirement is satisfied or not. As it is the essential phase of software development it will be carried out at the end. If the product matches with the user specification than the product is valid or else invalid. Where else in the verification we check whether the business requirement is satisfied or not. If a system is implemented without going through validation and verification it may give disfavor result. Hence, Software testing will evaluate a software to check the differences between given input and user expected output.[8]

**VALIDATION TESTING:**

The user must login to the system with his/her unique login id and password. If he/she fails to get logged in, then it will show alert message.

**FUNCTIONAL TESTING:**

The whole system is divided into different modules, which includes Pre-Protection Modes and Post-Protection Modes. The whole system for this module is tested and working properly.

**NAVIGATIONAL TESTING:**

After assembling all the pages, navigation was provided to each page. Navigation Testing is done on the proposed system to check the system flow.

**6.2 Test Case**

**Table 6.2.1 Test case for Login Layout**

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Test Cases Description** | **Input** | **Output** |
| 1 | If all fields are left empty | - | Display Login Layout |
| 2 | Email & Password correct | -Email  -Password | Protection Modes Page |
| 3 | Email & Password incorrect | -Email  -Password | Toast message showing Email & Password entered incorrect |

**Table 6.2.2 Test case for Registration Layout**

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Test Cases Description** | **Input** | **Output** |
| 1 | If all fields are left empty | - | Display Registration Layout |
| 2 | All details entered correctly | -Name  -Email  -Password  -Confirm Password  -City  -Mobile No | Registration successful.  Protection Modes Page |
| 3 | If any details entered is not proper or left empty | -Name  -Email  -Password  -Confirm Password  -City  -Mobile No | Displays error message in respective input fields |

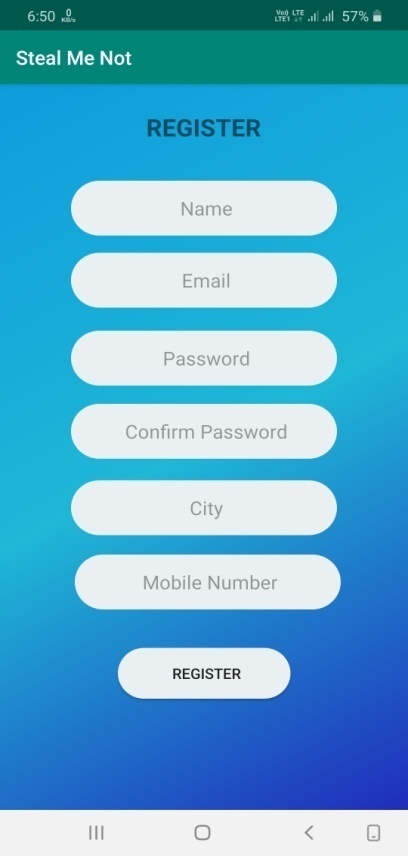
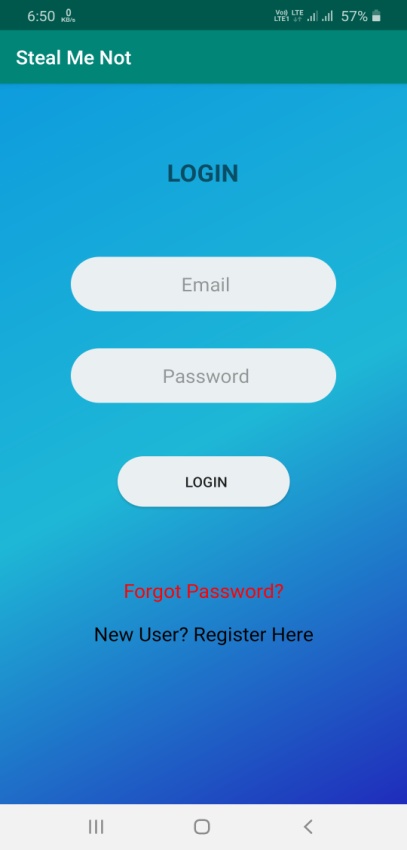
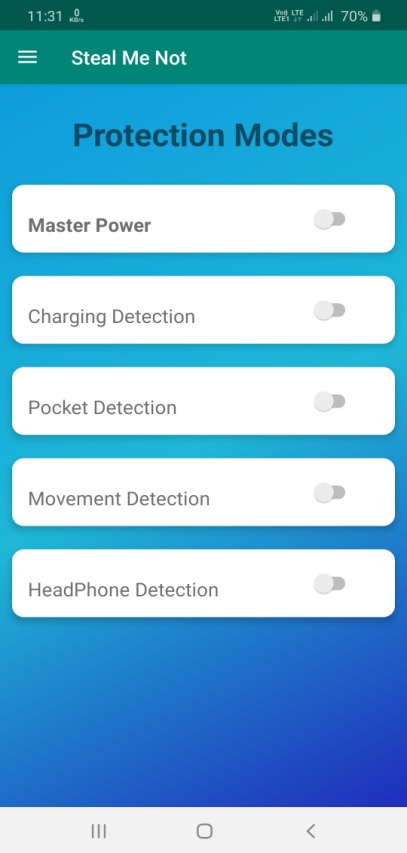
**Table 6.2.3 Test case for Emergency Contacts Layout**

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Test Cases Description** | **Input** | **Output** |
| 1 | If both input fields are left empty | - | Error message to enter Emergency contact numbers |
| 2 | All details entered correctly | -Number 1  -Number 2 | Contacts added successfully. |

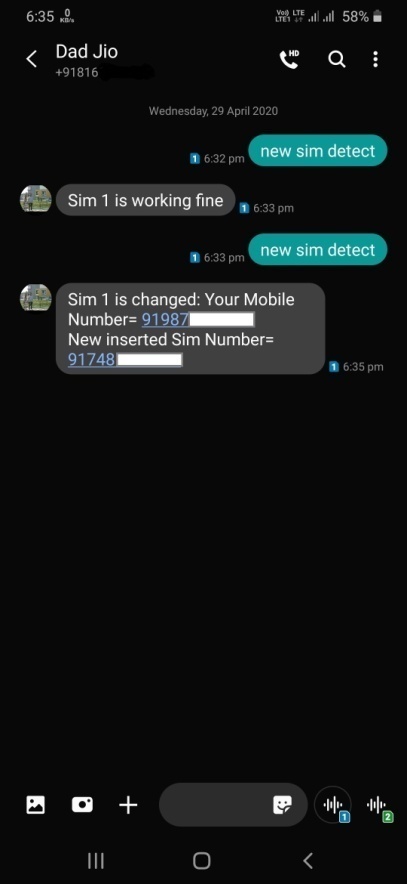
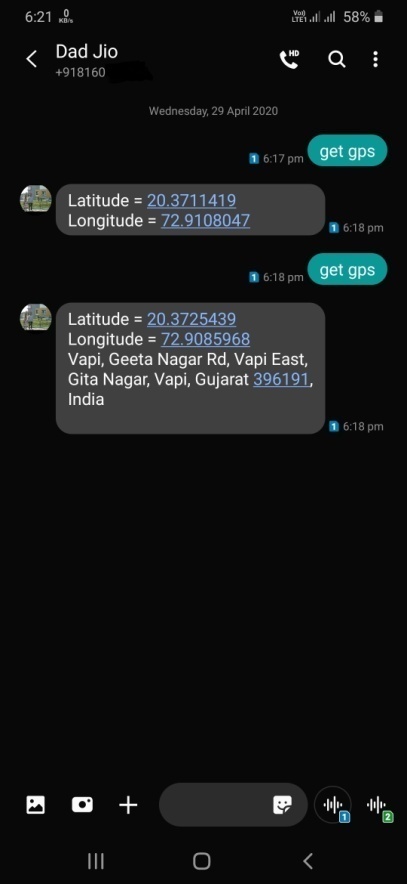
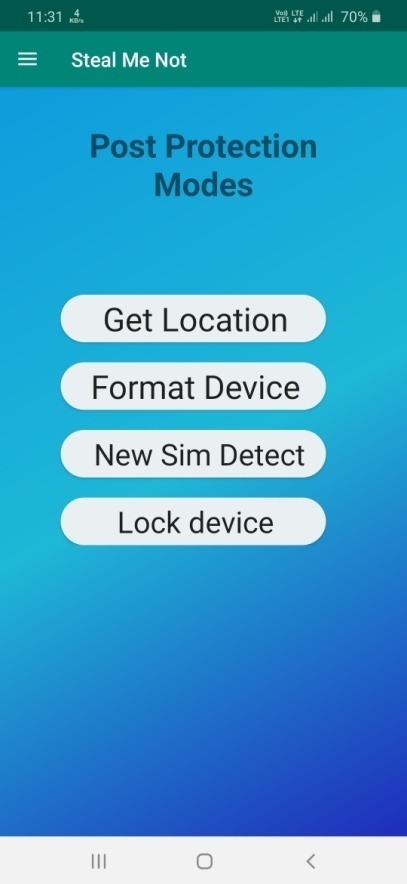
**Table 6.2.4 Test case for Forgot Password Layout**

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Test Cases Description** | **Input** | **Output** |
| 1 | If Email id is not entered | - | Error message to enter Email id |
| 2 | Email id entered correctly but not registered previously | -Email id | Message showing email id is not registered.  Registration Layout |
| 3 | Email id entered correctly & was also registered previously | -Email id | Message showing Password reset link sent to email id successfully |

**6.3 Important Screenshots**

** ** 

**Fig. 6.3.1 Registration Page Fig. 6.3.2 Login Page Fig. 6.3.3 Pre-Protection**

  **Fig. 6.3.4 Post-Protection Fig. 6.3.5 Fetching Location Fig. 6.3.6 Detecting SIM status**

**6.3 Sample Code**

* **Login**

package com.project.stealmenot;

import …

public class MainActivity extends AppCompatActivity {

EditTextetEmail,etPassword;

Button btnLogin;

private FirebaseAuthfirebaseAuth;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

etEmail = findViewById(R.id.etEmailLogin);

etPassword = findViewById(R.id.etPasswordLogin);

btnLogin = findViewById(R.id.btnLogin);

btnLogin.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

String email = etEmail.getText().toString().trim();

String password = etPassword.getText().toString().trim();

String emailPattern = "[a-zA-Z0-9.\_-]+@[a-z]+\\.+[a-z]+";

firebaseAuth = FirebaseAuth.getInstance();

try

{

if (TextUtils.isEmpty(email)) {

Toast.makeText(MainActivity.this, "Please enter your email id", Toast.LENGTH\_SHORT).show();

return;

}

if (TextUtils.isEmpty(password)) {

Toast.makeText(MainActivity.this, "Please enter your password", Toast.LENGTH\_SHORT).show();

return;

}

if (password.length() < 6) {

Toast.makeText(MainActivity.this, "Password length too small!", Toast.LENGTH\_SHORT).show();

return;

}

if(!email.matches(emailPattern))

{

Toast.makeText(MainActivity.this,"Invalid Email address",Toast.LENGTH\_SHORT).show();

return;

}

}

catch(Exception e)

{

Toast.makeText(getApplicationContext(),"Exception occured!!",Toast.LENGTH\_SHORT);

}

}

});

}

public void goToRegister(View view) {

startActivity(new Intent(MainActivity.this,RegisterActivity.class));

}

}

**Chapter 7: CONCLUSION and future work**

**Conclusion:**

This Android Application provide pre-protection modes like headphones detection, pocket detection, movement detection and charging detection to prevent mobile theft and in case if mobile is stolen other post-protection mode like request GPS location, Encrypt data are provided which one can use logging from other device using same user-id which is on stolen device. This application can be used so; day to day users of mobile phone can prevent their device from getting stolen and keep their data safe, as all of one's important data are present on mobile device. It will provides useful functionalities in very easy way and will be time saving.

**Future Work:**

In future work we would like to add more features like implementing automatically sending GPS Location, capturing image if alarm is ranging continuously for a longer time.

**REFERENCEs**

[1] ”Find My Device”: <https://en.wikipedia.org/wiki/Find_My_Phone>

[2] ”Mobile Tracking Based on Phone Theft Detection”, “Author: B. Srilekha, Dr. V. Dhanakoti”, “Journal name: IJARCCE” , “ISSN: 2278-1021”, “page number :192-197” : <https://www.ijarcce.com/upload/2016/march-16/IJARCCE%2048.pdf>

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**APPENDIX**

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